

ABSTRACT

This invention relates to a method and apparatus for forming a micromachined device, where a workpiece is plasma etched to define a microstructure. The plasma etching is conducted in the presence of a magnetic field, which can be generated and manipulated by an electric field. The magnetic field effects the electrons present in the plasma by directing them to “collect” on a desired plane or surface of the workpiece. The electrons attract the ions of the plasma to etch the desired region of the workpiece to a greater extent than other regions of the workpiece, thereby enabling the formation of more precise “cuts” in the workpiece to form specific shapes of microstructures. The magnetic field can be controlled in direction and intensity and substrate bias power can also be controlled during etching to precisely and accurately etch the workpiece.